UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

August 29, 2003

OFFICE OF THE ADMINISTRATOR
SCIENCE ADVISORY BOARD

MEMORANDUM

SUBJECT: U.S. EPA Science Advisory Board (SAB) Computational Toxicology Framework Consultation Panel - Panel Determination Memorandum

FROM: James N. Rowe ***/Signed/***
Designated Federal Officer
EPA Science Advisory Board Staff Office (1400A)

TO: Vanessa Vu, Ph.D.
Director
EPA Science Advisory Board Staff Office (1400 A)

THRU: Daniel Fort ***/Signed/***
Acting SAB Ethics Officer
EPA Science Advisory Board Staff Office (1400A)

This memo addresses the set of determinations that were necessary for forming a Science Advisory Board panel. In addition, it provides background information on this SAB activity and then addresses:

1) The tentative charge developed for the panel
2) The type of Panel that will conduct the review, the name of the Panel, and identification of the Panel Chair; the types of expertise needed to address the charge;
3) Identification of parties who are potentially interested in or may be affected by the topic to be reviewed;
4) Whether the charge involves a Particular Matter and how conflict of interest regulations under 18 U.S.C. 208 apply to members of the panel; and
5) How regulations concerning "appearance of lack of impartiality, under 5 C.F.R. 2635.502 apply to members of the panel;
6) The evaluation approach for determining how individuals will be selected for the "Short List" and panel selection.

A. Background

The EPA Science Advisory Board was asked to conduct a consultation with the Office of Research and Development (ORD) on a conceptual framework for computational toxicology. The Agency is seeking advice in development of a Computational Toxicology Research Strategy pursuant to reducing its reliance on animal testing protocols. EPA is faced with major data gaps for a large number of chemicals for which a testing program has been mandated or expected by Congress, e.g., endocrine disruptors, contaminant candidate lists, etc. At the present time, the Agency relies heavily on the use of animal testing protocols in mandated or required testing programs, but is moving toward the use of alternative approaches that are more sensitive to specific measures of toxicity.

Modern computing has transformed the science of molecular modeling, bioinformatics, and the simulation of complex systems. Genomics, defined broadly, has ushered toxicology into a new world of explaining cause-effect relationships and exposure biomarkers that seemed all but intractable a decade ago. The union of modern computing and genomics has created the remarkable ability for molecular profiling of effects at a speed and scale that could transform conventional risk assessment practices in regulatory agencies, similar to the revolution that is now occurring with drug and pesticide design and discovery in the pharmaceutical and agrochemical industries. To bring this emerging area of computational toxicology into the service of EPA, ORD will develop a strategy and program that defines its niche and then work with other agencies and academic scientists to fully incorporate the power of molecular profiling and simulations into its current scientific approaches.

The risk assessment paradigm used by ORD to plan research consists of a continuum of connected processes leading from the emission source(s), to transport / transformation of a pollutant, to exposure of populations and individuals, to dose and initial molecular events, to ecological and human outcomes. All Labs and Centers in ORD focus their research on scientific uncertainties along this continuum. The Computational Toxicology Initiative will build upon this foundation and bring the technologies of genomics and structure-activity relationships to bear on the development of a new generation of risk assessment tools along the continuum.

This initiative builds upon ORD's pilot efforts in using Quantitative Structure-Activity Relationships (QSAR) in an attempt to decrease animal use in research projects. Once a proof of concept for Computational Toxicology research has demonstrated that high volume chemicals can be evaluated without using animal testing, then the program will be able to address chronic development and reproductive effects. Advances in genomics research allow both the design and risk assessment of chemicals to be much more strategic and cost-effective, and will likely lead to streamlined testing protocols. Computational toxicology integrates genomics, quantitative structure-activity relationships (QSAR), and systems biology to develop computerized evaluation systems which will be able to screen chemicals in virtual systems and prescribe testing that is most likely to be useful in the EPA risk management decisions.

B. Determinations

1. <u>The Charge to the Panel</u>

The following charge was agreed upon by EPA/ORD, the Chair of the Consultation Panel and the SAB Staff Director.

EPA seeks comment that will assist the Agency in the development of more detailed research plans. The Office of Research and Development is beginning to establish an research program in the area of computational toxicology and has developed a Framework document to guide that process. The Agency invites comment on all technical aspects of the research approaches and activities within the Framework and how the Framework might be improved. The following questions are provided to assist the panel in conducting the consultation. Comments are invited on all areas of the Framework including areas that are not addressed in the questions.

Charge Question 1. Please comment on the soundness of the general organizing principles contained in the "Framework for a Computational Toxicology Research Program in ORD," including the goals of the computational toxicology program, the research needs and applications of computational toxicology, the current activities, and the proposed next steps.

Charge Question 2. The scope of the program (Section II) has been developed along the key activities of improving the linkages in the Source-to-Outcome Continuum, providing predictive models for hazard identification, and enhancing quantitative risk assessment. Does the panel agree that these are the major issues of concern for improving the Agency's scientific assessments of pollutants on human health and the environment, and that the needs have been clearly articulated in terms of the benefits of a computational toxicology approach? Does the Framework capture the key scientific uncertainties that need to be addressed in computational toxicology?

Charge Question 3. Please provide specific recommendations, where appropriate, for addressing issues that are not captured by the Framework.

Charge Question 4. Can the Science Advisory Board suggest priorities within the research needs and applications of computational toxicology to environmental problems?

Charge Question 5. Establishment of an effective research program will require partnerships with outside organizations. Some of the current activities are listed in the Section III.C (pages 36-37). Please comment on whether sufficient measures are being taken to involve the larger scientific community and the public.

Charge Question 6. The process for developing the program in computational toxicology in ORD is outlined in Section I (page 38). Please comment on whether the proposed next steps allow for the scientific issues to be addressed adequately in a timely fashion.

Charge Question 7. Finally, please comment on whether there are any additional actions, within the context of computational toxicology as defined in the Framework, that could

improve the Agency's scientific assessments of chemical hazards to human health and the environment.

2. Type of Panel That Will Be Used to Conduct the Consultation, The Name of the Panel, and Identification of the Panel Chair, and Types of Expertise Needed to Address the Charge

The consultation will be conducted by an EPA SAB Executive Committee *Ad Hoc* Panel. The panel is entitled, "Computational Toxicology Framework (CTF) Consultative Panel". An *ad hoc* panel is created when there is no Standing Committee which is established to address an issue, e.g., computational toxicology. An FR notice was published on April 30, 2003 (widecast) requesting nominations from which a "short list" was selected and posted on the SAB website on June 10, 2003 (Attachments 1, 2). The FR notice indicated the expertise areas that might be needed to form the panel: comparative genomics/proteomics/ metabonomics; mixtures; quantitative structure-activity relationships; systems biology; endocrine disruptors;computational biology/ bioinformatics; mathematical biology/mathematical chemistry; pharmacokinetics/ metabolism of toxicants/PBPK/BBDR; exposure; and fate and transport. We have followed the normal "Widecast," "Short List", and "Panel Selection" procedures in selecting experts to form the consultation panel.

3. Identification of Parties Who Are Potentially Interested In Or May Be Affected By The Topic To Be Reviewed

Potentially interested parties will be those involved with computational toxicology research, analysis and risk assessment implementation at EPA, in other federal agencies (OMB, DOE, NIEHS, NTP, FDA, USDA), in State and local environmental agencies and some elected officials. In addition, some non-government organizations who focus on environmental policy development will be interested (e.g., NRDC, EDF, ACC, CMA, CEHN, CSIPI, Wilson International Center for Scholars,). Academic/industry researchers or industry research institutes (CIIT, pharmaceutical firms) involved in "omics" (genomics, proteomics, metabonomics), computational biology/chemistry, and QSAR, and those who are involved with integrated hazard/screening assessment techniques will also be interested in this topic.

4. Whether The Charge Involves a "Particular Matter[1]" and How Conflict of Interest Regulations Under 18 U.S.C. § 208 Apply to Members of the Subcommittee

In consultation with the Alternate Agency Ethics Official, the Acting SAB Ethics Officer determined that the activity of the Computational Toxicology Framework Consultative Panel in addressing the charge does not focus on the interests of specific people (i.e, it is not a "specific party matter") it does qualify as a particular matter because the deliberation does focus on the

[1]The term "particular matter" refers to matters that involve deliberation, decision, or action that is focused on the interests of specific people or a discrete and identifiable class of people. The term may include matters that do not involve formal parties and may extend to legislation or policy-making that is narrowly focused on the interests of a discrete and identifiable class of people. But the term does not cover consideration or adoption of broad policy options directed to the interests of large and diverse group of people. 5 C.F.R. § 2640.103(a)(1).

interests of a discrete and identifiable class of people, i.e., researchers who might seek EPA funding to conduct research on environmental issues related to computational toxicology.

Discussions during an SAB consultation are considered to be among a collection of individuals who are SAB panelists and the Agency. They provide generic advice and do not focus upon specific projects. There is no intent to develop consensus nor is there a report developed. These deliberations will not lead to an SAB consensus report. There will also be an intervening workshop and external, non-SAB peer review from which ORD will prepare Requests for Proposal to identify intramural and extramural research themes. An independently developed Multi-Year Plan will be used later to guide those in EPA in soliciting research project proposals from any member of the scientific community, not just SAB panelists. After the Multi-Year Plan is developed, independent scientists will review the proposals submitted by individual scientists and assign them a quality score. The resulting ranked listing or proposed projects is then considered by a cross-EPA panel for relevancy to EPA's needs in each area prior to making a funding decision on a specific project. Because of this, it would be unlikely that a panelist's participation in this consultation would have a direct and predictable effect on their financial interests. Therefore, the likelihood of a financial conflict of interest as defined by 18 U.S.C. 208 is remote.

As a result of careful and thorough review of the EPA Form 3110-48 provided by each prospective CTF member, the Acting SAB Ethics Officer, in consultation with the Alternate Agency Ethics Official, has determined that there is no financial conflict-of-interest presented for the selectees for the CTF panel. In addition, that the CFT Panel's advice on the particular matter under review will not have a direct effect on the financial interest of the CTF panel members[2].

5. How Will Regulations Concerning "Appearance of Lack of Impartiality" Under 5 C.F.R. §2635.502, And Other Ethics Factors, Apply to Members of the Panel

The Code of Federal Regulations states that: "Where an employee knows that a particular matter involving specific parties is likely to have a direct and predictable effect on the financial interest of a member of his household, or knows that a person with whom he has a covered relationship is or represents a party to such matter, and where the person determines that the circumstances would cause a reasonable person with knowledge of the relevant facts to question his impartiality in the matter, the employee should not participate in the matter unless he has informed the agency designee of the appearance problem and received authorization from the agency designee." The CTF consultation is not a "specific party" matter; therefore, there is no legal issue concerning conflict-of-interest under Federal regulations.

[2]A particular matter has a direct effect on a financial interest if a close causal link exists between any decision/action to be taken in the matter and any expected effect of the matter on the financial interest. An effect may be direct even though it does not occur immediately. A particular matter does not have a direct effect on a financial interest, however, if the chain of causation is attenuated or is contingent upon the occurrence of events that are speculative or that are independent of, and unrelated to, the matter. A particular matter that has an effect on a financial interest only as a consequence of its effects on the general economy is not considered to have a direct effect. 5 C.F.R. § 2640.103(a)(3)(i).

In addition, to ascertain whether there was any potentially-disqualifying involvement with the topic of the CTF consultation, which would indicate an appearance of a lack of impartiality, the following five (5) questions were posed to all candidates for the CTF consultation:

a. Do you know of any reason that you might be unable to provide impartial advice on the matter to come before the panel or any reason that your impartiality in the matter might be questioned?
b. Have you had any previous involvement with the issue (s) or document(s) under consideration, including authorship, collaboration with the authors, or previous peer review functions? If so, please identify that involvement.
c. Have you served on previous advisory panels or committees that have addressed the topic under consideration? If so please identify those activities.
d. Have you made any public statements (written or oral) on the issue? If so, please identify those statements.
e. Have you made any public statements that would indicate to an observer that you have taken a position on the issue under consideration? If so, please identify those statements.

Additionally, the SAB Staff Office attempted to minimize any conflict-of-interest considerations of potential appearance of a lack of impartiality by selecting only individuals who do not currently receive funding from EPA sources that may be linked to the CTF consultation.

Both the CTF DFO and the Acting SAB Ethics Officer have reviewed the response to the above (5) questions provided by each candidate for the CTF Panel and, in consultation with the Alternate Agency Ethics Official, have determined that there is no appearance of a lack of impartiality on the part of the selectees for the CTF Panel.

6. How Individuals Were Placed on the "Short List" as Candidates for the CTF Panel; and Solicitation of Public Comments on the CTF "Short List" Candidates

As noted in item 2 above, the consultation will be conducted by the EPA SAB's Computational Toxicology Framework Consultative Panel. To obtain specific expertise for the members who will participate in the review, and to ensure balance of perspectives across the panel, the SAB Staff Office has published a solicitation notice in the *Federal Register*, informing the public of the consultation, the various expertises desired and to solicit nominations of candidates for inclusion in the panel.

Twenty-nine (29) individuals were nominated for membership on the CTF Consultative Panel. On the basis of the candidates' qualifications, the SAB Staff Office made the decision to put 25 nominees on the "short list". On June 10, 2003, the SAB Staff Office posted a notice on the SAB Web site inviting public comments on the "short list" of 25 prospective candidates for the CTF Consultative Panel. That notice stated that SAB staff reviewed the nominations for the Panel, and identified a "short list" of 25 based on the qualifications and interest of the nominees.

The SAB Staff Office requested public comments on the list of the CTF Panel candidates. In particular, the notice on the Web site stated that the Staff Office would welcome any information, analysis or documentation that the SAB Staff Office should consider in evaluating the candidates on the "Short List", and asked that any advice, observations or comments which would be helpful in selecting the final candidates be provided to the SAB Staff Office no later than July 1, 2003. *The SAB Staff Office received two comments (see Attachment 3).*

Results of the widecast and review of their potential for "appearance of lack of impartiality" or "conflict of interest" issues have been used to select the expertises and balance the points of view as needed.

7. How Individuals Were Selected for the CTF Panel Members

The CTF DFO and the Acting SAB Ethics Advisor, in consultation with the CTF Chair, make recommendations to the SAB Staff Director about who will serve on the CTF Consultative Panel during the "Panel Selection" phase. Selection criteria included: excellent qualifications in terms of education, scientific and technical expertise; experience; the need to maintain a balance with respect to members' qualifying expertise, background and perspectives; willingness to serve on the subcommittee; availability to meet during the proposed time periods; public comments on the short list; Confidential Financial Information; supplemental information from candidates on their prior involvement with the issue (financial or technical); and past committee experience. Selectees for the CTF Panel have backgrounds that include experience with academia, industry, non-Governmental organizations (NGOs) and consultant groups.

Accordingly, based on the above-specified criteria, a CTF Panel of the following thirteen experts are recommended:

1. Dr. George Lucier, Consulting Toxicologist (NC) (Chair)
2. Dr. Melvin Anderson, CIIT-Centers for Health Research (NC)
3. Dr. John Balbus, Environmental Defense (Washington, DC)
4. Ms. Patricia Billig, Consultant, Waterstone Environmental Hydrology and Engineering (CO)
5. Dr. Richard Becker, American Chemistry Council (VA)
6. Dr. Stuart Cagen, Shell Chemicals, Ltd. (TX)
7. Mr. Harvey Clewell, Environ (LA)
8. Dr. Darrell Donahue, University of Maine (ME)
9. Dr. Alex Merrick, NIEHS (NC)
10. Dr. Charles Pittinger, The Cadmus Group, Inc. (OH)
11. Dr. Clifford Weisel, UMDNJ/EOHSI (NJ)
12. Dr. Angela Wilson, University of North Texas (TX)
13. Dr. Andrew Worth, European Commission (Italy)

Concurred,

/Signed/ **8/29/03**

Vanessa Vu, Ph.D. Date
Director
EPA Science Advisory Board Staff Office

cc Robert Flaak

ATTACHMENT 1

Science Advisory Board, Computational Toxicology Framework
Consultative Panel; Request for Nominations for Expertise

[Federal Register: April 30, 2003 (Volume 68, Number 83)]
[Notices]
[Page 23131-23132]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr30ap03-50]

ENVIRONMENTAL PROTECTION AGENCY
[FRL-7490-2]

Science Advisory Board, Computational Toxicology Framework
Consultative Panel; Request for Nominations for Expertise

AGENCY: Environmental Protection Agency (EPA).
ACTION: Notice.

SUMMARY: The Environmental Protection Agency (EPA) Science Advisory Board (SAB) announces the formation of a new ``Computational Toxicology Framework (CTF) Consultative Panel'' and is soliciting nominations for members of the panel.

DATES: Nominations should be submitted by May 21, 2003. The consultation of the panel is planned for the summer of 2003 (tentatively mid-July) in Chicago, IL.

ADDRESSES: Nominations should be submitted in electronic format through the Form for Nominating Individuals to Panels of the EPA Science Advisory Board provided on the SAB Web site. The form can be accessed through a link on the blue navigational bar on the SAB Web site, www.epa.gov/sab. To be considered, all nominations must include the information required on that form. Anyone who is unable to submit nominations via this form may contact Dr. James N. Rowe, Designated Federal Officer (DFO) as indicated below.

FOR FURTHER INFORMATION CONTACT: Any member of the public wishing further information regarding this Request for Nomination may contact

Dr. James N. Rowe, by telephone/voice mail at (202) 564-6488, or via e-mail at rowe.james@epa.gov. General information about the SAB can be found in the SAB Web site at http://www.epa.gov/sab.

SUPPLEMENTARY INFORMATION:

Summary: The U.S. Environmental Protection Agency (EPA or Agency) Science Advisory Board is requesting nominations of expertise for a review panel to evaluate the EPA's Office of Research and Development framework for the development of an initiative in Computational Toxicology. (Computational Toxicology is defined as the application of models from computational and mathematical biology and computational chemistry for prediction and understanding mechanisms.)

This Panel is being formed to provide advice to the Agency as part of the EPA SAB mission, established by 42 U.S.C. 4365, to provide independent scientific and technical advice, consultation, and recommendations to the EPA Administrator on the technical bases for EPA positions and regulations.

This project is intended as a consultation on the direction of the CTF; the background for the effort and the charge to the Panel is described below. The Board is a chartered Federal Advisory Committee, which reports directly to the Administrator.

Members of the Panel will provide advice to the Agency, through the SAB's Executive Committee. The Panel will comply with the provisions of FACA and all appropriate procedural policies, including the SAB process for panel formation described in the EPA Science Advisory Board (SAB) Panel Formation Process: Immediate Steps to Improve Policies and Procedures--An SAB Commentary (EPA-SAB-EC-COM-002-003), http://www.epa.gov/sab/ecm02003.pdf.

Background: The EPA's Office of Research and Development is seeking SAB advice in development of a Framework for the Use of Computational Toxicology in Risk Assessment. Computational toxicology involves the application of various mathematical and computer models for prediction and the understanding of mechanisms. The Computational Toxicology Initiative is a technology-based, hypothesis-driven effort to increase the soundness of risk assessment decisions within the Agency, while building the capacity to prioritize, screen and evaluate significantly greater numbers of chemicals by enhancing the predictive understanding of toxicities. Success will be measured by the ability to improve assessments relative to the traditional means that have been utilized to understand modes of action and to characterize adverse outcomes, and by classifying chemicals by their potential to influence molecular and biochemical pathways of concern.

ORD has found it useful to envision the risk assessment paradigm as a continuum of events leading from environmental release to adverse

effect. Between those two events are a whole cascade of events that lead from one measurable event to the next. ORD's research program focuses on learning more about the processes that lead from exposure to adverse outcome. ORD will use new techniques in computational toxicology (bioinformatics, mathematical biology, computational chemistry), toxicogenomics technology (genomics, proteomics, metabonomics) and systems biology to improve the understanding of the linkages between the processes in the continuum.

The overall goal of ORD's research initiative on Computational Toxicololgy is to use the biology and computing to provide EPA with the tools to improve quantitative risk assessments and reduce uncertainties in the source to adverse outcome continuum. To meet this goal, ORD has identified three strategic objectives for the Computational Toxicology Initiative:

• Develop improved linages across the source-to-outcome paradigm. Understanding those linkages will decrease uncertainties in assessing risk to human health and the environment.

• Develop strategies for prioritizing chemicals for subsequent screening and testing. The current approach requires extensive resources for screening and testing chemicals and an approach must be developed to determine which chemicals or classes of chemicals in the universe or chemicals should be screened and tested first.

• Develop better methods and predictive models for quantitative risk assessment.

Tentative Charge to the Panel: The charge is for a consultation by the Panel to review the Computational Toxicology Framework being developed by ORD and advise on appropriate research directions and roles. A ``consultation'' is one of several types of formal interactions between the Agency and the Science Advisory Board. The purpose of the consultation is to conduct an early discussion between the Agency and the SAB to help articulate important issues in the development of the project. The meeting is public and consists of briefings and discussions. In some cases a partial document, or an early draft is available to serve as a basis for discussions. A charge is often defined but is less focused than that used in a formal peer review. No consensus advice is sought and no report is generated by the SAB.

SAB Request for Nominations: The EPA SAB is requesting nominations of individuals who are recognized, national-level experts in one or more of the following disciplines necessary to contribute to the discussions to be addressed by the Consultative Panel for the Computational Toxicology Framework:

(a) Comparative genomics/proteomics/metabonomics;

(b) Mixtures;
©) Quantitative structure-activity relationships;
(d) Systems biology;
(e) Endocrine disruptors;
(f) Computational biology/bioinformatics;
(g) Risk assessment;

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(h) Mathematical biology;
(I) Pharmacokinetics/metabolism of toxicants: PBPK/BBDR
(j) Exposure; and
(k) Fate and transport;

Process and Deadline for Submitting Nominations: Any interested persons or organization may nominate qualified individuals to add expertise to the Panel in the above areas. Nominations should be submitted in electronic format through the Form for Nominating Individuals to Panels of the EPA Science Advisory Board provided on the SAB Web site. The form can be accessed through a link on the blue navigation bar on the SAB Web site, www.epa.gov/sab. To be considered, all nominations must include the information required on that form.

Anyone who is unable to submit nominations using this form, and any questions concerning any aspects of the nomination process may contact Dr. James Rowe as indicated above in this Federal Register notice. Nominations should be submitted in time to arrive no later than May 21, 2003.

The EPA Science Advisory Board will acknowledge receipt of the nomination and inform nominators of the panel selected. From the nominees identified by respondents to this Federal Register notice (termed the ``Widecast''), SAB Staff will develop a smaller subset (known as the ``Short List'') for more detailed consideration. Criteria used by the SAB Staff in developing this Short List are given at the end of the following paragraph. The Short List will be posted on the SAB Web site at http://www.epa.gov/sab, and will include, for each candidate, the nominee's name and biosketch. Public comments will be accepted for 21 calendar days on the Short List. During this comment period, the public will be requested to provide information, analysis or other documentation that the SAB Staff should consider in evaluating candidates for the Panel.

For the EPA SAB, a balanced review panel (i.e., committee, subcommittee, or panel) is characterized by inclusion of candidates who possess the necessary domains of knowledge, the relevant scientific perspectives (which, among other factors, can be influenced by work history and affiliation), and the collective breadth of experience to

adequately address the charge. Public responses to the Short List candidates will be considered in the selection of the panel, along with information provided by candidates and information gathered by EPA SAB Staff independently on the background of each candidate (e.g., financial disclosure information and computer searches to evaluate a nominee's prior involvement with the topic under review). Specific criteria to be used in evaluating an individual subcommittee member include: (a) Scientific and/or technical expertise, knowledge, and experience (primary factors); (b) absence of financial conflicts of interest; ©) scientific credibility and impartiality; (d) availability and willingness to serve; and (e) ability to work constructively and effectively in committees.

Short List candidates will also be required to fill-out the ``Confidential Financial Disclosure Form for Special Government Employees Serving on Federal Advisory Committees at the U.S. Environmental Protection Agency" (EPA Form 3110-48). This confidential form, which is submitted by EPA SAB Members and Consultants, allows government officials to determine whether there is a statutory conflict between that person's public responsibilities (which includes membership on an EPA Federal advisory committee) and private interests and activities, or the appearance of a lack of impartiality, as defined by Federal regulation. The form may be viewed and downloaded from the following URL address: http://www.epa.gov/sab/pdf/epaform3110-48.pdf. Subcommittee members will likely be asked to attend at least one public face-to-face meeting and one public conference call meeting over the anticipated course of the consultative activity.

Dated: April 22, 2003.
Vanessa T. Vu,
Director, EPA Science Advisory Board Staff Office.
[FR Doc. 03-10651 Filed 4-29-03; 8:45 am]
BILLING CODE 6560-50-P

ATTACHMENT 2

Invitation for Comments on the "Short List" Candidates for the Panel for a Computational Toxicology Framework Consultation
EPA Science Advisory Board (SAB)
June 10, 2003

The EPA Science Advisory Board (SAB) announced in 68 FR 23131-23132, April 30, 2003, that it was forming the Panel for a Computational Toxicology Framework Consultation and requested nominations for potential panel members. Background on the project and details on panel nomination process appear in the above referenced Federal Register notice and are also available at the SAB website (www.epa.gov/sab).

The Science Advisory Board Staff Office has reviewed the nominations for the Panel, and has identified a list of nominees for a "Short List" of 25 candidates based on the qualifications and interest of the nominees. Brief biosketches of the candidates on the "Short List" are listed below for comment. We invite comments from the public on these candidates. We welcome information, analysis or documentation that the Board should consider in evaluating the "Short List" remaining candidates.

The SAB Staff Office Director, in consultation with SAB leadership, as appropriate makes the final decision about who will serve on the panel in the "Panel Selection" phase. In that phase, SAB Staff completes its review of information regarding conflict of interest, possible appearance of lack of impartiality, and appropriate balance and breadth needed to address the charge. They review all the information provided by the candidates, along with any information that the public may provide in response to the posting of information about the prospective panel on the SAB website during the "Short List Phase," and information gathered by SAB Staff independently on the background of each candidate.

Please provide any advice, observations or comments you might think would be helpful in selecting the final candidates, no later than July 1, 2003. Please make your comments to the attention of Dr. James Rowe, Designated Federal Officer. E-mailing comments (rowe.james@epa.gov) is the preferred mode of receipt. We intend to make final selections by July 7, 2003.

BioSketch

Dr. Andersen is the Director, Division of Biomathematics and Physical Sciences, CIIT-Centers for Health Research, Research Triangle Park, NC. His responsibilities include imparting a systems biology emphasis toresearch on the health effects of environmental chemicals. Dr. Andersen was Professor of Environmental Health from 1999 to 2002. From1994-1998, Dr. Andersen was Vice-President of the K.S. Crump Group of ICF Kaiser International Consulting. Between 1971 and 1994, he heldpositions in toxicology research and research management in the federal government (DoD and US EPA) and in private industry (Chemical Industry Institute of Toxicology). His career contributions are in developing biologically realistic models of the uptake, distribution, metabolism, and biological effects of drugs and toxic chemicals and applying these models in safety assessments and quantitative health risk assessments.He is recognized for contributions in developing short-courses and computer demonstrations in pharmacokinetics and pharmacodynamicmodeling. Dr. Andersen is an author or co-author of 225 papers and 33 book chapters. He has received several awards for professional contributions. These awards include the Herbert Stokinger Award(American Conference of Industrial Hygienists, 1988), the George Scott Award (Toxicology Forum,1993), the Kenneth Morgareidge Award(International Life Sciences Institute, 1989), and both the Frank R. Blood (1982) and Achievement Awards (1984) from the Society of Toxicology. Dr. Andersen is board certified in Industrial Hygiene and in Toxicology. His current research interests are developingmathematical descriptions of control of genetic circuitry in the developing and adult organism and the dose response and risk assessmentimplications of these control processes. In June 2002, Dr. Andersen was recognized as a 'highly cited' scientist by the Institute for ScientificInformation.In the past 5 years, Dr. Andersen has had research funding while at Colorado State University from the US EPA STAR Grant program (Atrazine Biomonitoring Tools), the American Chemistry Council (BothDefeminization of Rats by Estrogenic Endocrine Active Compounds and Hepatic Enzyme Induction by PCBs), Dow Corning (SiloxanePharmacokinetics in Rats and Humans) and Syngenta (Pharmacokinetics andPharmacodynamics of Atrazine in Rats).

John M. Balbus, M.D., M.P.H. is a senior scientist and director of the environmental health program for Environmental Defense. Dr. Balbus' background combines training and experience in clinical medicine with expertise in epidemiology, toxicology and risk sciences. He has authored studies and lectures on global climate change and health, waterborne hazards, the toxic effects of chemicals, and regulatory approaches to protecting susceptible subpopulations. Dr. Balbus received his A.B. degree in Biochemistry from Harvard University, his M.D. from the University of Pennsylvania, and his M.P.H. from the Johns Hopkins University. He completed his internal medicine residency at Pennsylvania Hospital and his residency in occupational and environmental medicine at the Johns Hopkins School of Hygiene and Public Health.Prior to joining Environmental Defense, Dr. Balbus spent seven years at The George Washington University, where he was founding Director of the Center for Risk Science and Public Health and served as Acting Chairman of the Department of Environmental and Occupational Health. Appointed in both the School of Public Health and Health Services and the School of Medicine and Health Sciences, Dr. Balbus taught toxicology, environmental health and occupational medicine to both graduate public health students and medical students. He was principle investigator on a five year cooperative agreement with the US EPA's Office of Water, concerning microbial risk assessment and susceptible subpopulations. Dr. Balbus is a Fellow of the American College of Physicians, and member of the American Public Health Association, American College of Occupational and Environmental Medicine, and the Society for Risk Analysis.

James Charles Ball 1083 Jewell Rd.Milan, Michigan 41860Technical SpecialistFord Motor Company, Scientific Research LaboratoryChemistry Department: Room S3083P.O. Box 2053Dearborn, Michigan 48121Work Phone: (313) 845-0634 Home Phone: (313) 429-1280Born: January 30, 1953 Citizenship: USAResearch Scientist, Ford Motor Company, Chemistry Department, 1982-PresentAdjunct Associate Professor, Department of Biology, Central Michigan University 8/1996 - 6/2002 - Vertebrate Biology Research Associate, Michigan State University, 1980-1982, with Ph.D. Chemistry (Bio/organic Chemistry), Univ. of New Mexico, 1980B.S. Chemistry, California State Polytechnical University at Pomona, 1976Honors and Professional SocietiesGraduated Cum Laude - 1976 Society for the Study of Amphibians and ReptilesAmerican Association for Cancer Research Herpetologists’ LeagueAmerican Chemical Society American Society of Ichthyologists andEnvironmental Mutagen Society HerpetologistsSigma Xi Henry Ford Technology Award - 1996 Society of Environmental Toxicology & Chemistry

Richard A. Becker, Ph.D., DABTCurrent position: Senior Director, Public Health, American Chemistry CouncilEducational background: Â Ph.D. in Pharmacology & Toxicology, University of California Irvine 1981Â BA Chemistry, Swarthmore College, 1977Area of expertise and research activities Â Toxicology and Risk AssessmentÂ Development and validation of endocrine screens/testsService on other advisory committees, professional societies, especially those associated with issues under discussion in this review Â Member USEPA CCL Subcommittee (FACA)Â Member Society of ToxicologyÂ BIAC Representative & Participant OECD Endocrine Disrupters Testing and Assessment (EDTA) Task ForceSources of recent grant and/or contract support: Support for research & lab projects I have directed has been provided by the American Chemistry Council

Ms. Billig, BA & MPH (UC Berkeley), MA (San Francisco State University), REHS and Vice President of Waterstone Environmental Hydrology and Engineering, has over 23 years experience conducting and managing more than 100 environmental investigation andmodeling projects and subsequent ecological and human health risk assessments for corrective actions both nationally and internationally. She also has led and participated in national and international high-level meetings and negotiations with representatives from industry, national and local governments, and non-government organizations to identify and bring together disparate groups of stakeholders and facilitate collaborative processes to reach agreements on solutions to public health and environmental concerns. She has developed workshops and training sessions for environmental and industrial professionals in Eastern Europe, the Middle East, Africa, Latin America and the U.S., primarily related to environmental and risk assessment issues. As a result of her work, she co-authored a USAID Publication entitled: A Community-Based Approach to Environmental Health: Guidance for Implementation & Plans for Skill-Building Workshops. From 1998-99, she served as the Risk Assessment Expert on a five person panel convened by the Water Environment Research Foundation to provide consultation and oversight to King County (Seattle), WA for an extensive water quality modeling evaluation and ecological/human health risk assessment of the county's combined sewer overflow (CSO) control program. In August 2002, Ms. Billig was certified in the Sandia Risk Assessment

Methodology for Water Surety (RAM-WSM). Recent contracts include risk assessment and toxicology services for the Wyoming Department of Environmental Quality and the US Army Corps of Engineers.

Rodney J. Boatman, Ph.D., DABTA graduate of the University of Wisconsin (Ph.D. in Chemistry). Graduate and post-doctoral work involved the synthesis of anti-tumor compounds and other novel organic compounds. Initial work experience at the Eastman Kodak Company included the development of methods to monitor fate and persistence of organic chemicals in the environment. More recent experience includes the conduct of metabolism and pharmacokinetic studies; protein binding studies with hydroquinone; and in vitro kidney cell work with hydroquinone and related metabolites. Duties include membership on a number of Departmental teams including the Chemical Evaluation Team and the Early Warning Team and chairmanship of the Institutional Animal Care and Use Committee. Professional expertise includes the areas of mammalian metabolism and carcinogenicity and quantitative (structure/activity) methods for predicting toxicity. Has served for the past ten years as consulting member of two American Chemistry Council Panels for glycol ethers.

Dr. Borgert is the founder of APT and directs scientific and business development activities of the company. Dr. Borgert received an artium baccalaurei from Kenyon College and a doctoral degree in Medical Sciences from the Department of Pharmacology and Experimental Therapeutics, University of Florida College of Medicine. He completed a postdoctoral fellowship in toxicology at the University of Florida Center for Environmental and Human Toxicology during which time he served as an external expert reviewer for risk assessments submitted to the Florida Department of Environmental Protection. Dr. Borgert currently holds a courtesy faculty appointment in the Department of Physiological Sciences, University of Florida College of Veterinary Medicine, has an active research program in collaboration with other faculty, serves on graduate thesis committees and lectures on toxicology and environmental policy at UF. He is active in professional societies and is currently Treasurer of the International Society of Regulatory Toxicology and Pharmacology and a member of its governing Council.Dr. Borgert served on the U.S.EPA Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC) as the general representative for Small Business stakeholders. He also served on the Screening and Testing Workgroup of the EDSTAC and Co-chaired the Communication and Outreach Workgroup. Dr. Borgert continues to participate in inter-industry groups addressing the validation and standardization of endocrine screening and testing assays pursuant to EDSTAC. He has served on expert panels of the Society of Toxicology (SOT), International Life Sciences Institute (ILSI), the Society of Environmental Toxicology and Chemistry (SETAC) and the American College of Toxicology (ACT) to address drug interactions, cumulative risk assessments, dose-response-mechanisms of action, formulation of research agendas, and human biomonitoring for chemical mixtures. He has served on peer-review panels for both the US Environmental Protection Agency (EPA) and the Agency for Toxic Substances and! Disease Registry (ATSDR).Dr. Borgert's current areas of specialization include chemical mixtures and the analysis of drug and chemical interactions. He has published significant contributions to the mixtures field regarding the evaluation of interaction studies for risk assessment, study designs for interaction analysis, and methods of comparative risk assessment for mixtures of contaminants in human milk. He has given numerous invited presentations on interactions involving chemicals, drugs, and dietary supplements. Dr. Borgert is also involved in basic laboratory research to develop assays and methods of analysis for chemical interactions to support human health and ecological risk assessments. He and collaborators have presented their results at recent meetings of SOT and SETAC, and several basic research manuscripts are in preparation.

Stuart Cagen: Current Position: Toxicology Advisor, Shell Chemicals, Ltd., Houston, Texas Educational Background: University of Wisconsin, Madison, Wisconsin (B.S. 1973) Michigan State University, East Lansing, Michigan (Ph.D., Pharmacology, 1977) Area of Expertise: Toxicology, with emphasis on endocrine, reproductive and developmental toxicology, mechanisms of toxicity, including pharmacokinetics, risk assessment.Research Activities: Toxicology studies (endocrine, reproduction, developmental toxicity, neurotoxicity), biochemical mechanisms, metabolism studies, risk assessment.Service on other advisory committees, professional societies, especially those associated with issues under discussion in thisreview:American Industrial Health Council, Neurotoxicology and Reproduction and Developmental Toxicology SubcommitteesMember, Board of Directors, CIIT (1999-2001)Member, CIIT Science Program Committee (1999-present)Candidate member: ACGIH Chemical Substances Threshold Limit Value Committee (current) American Chemistry Council Endocrine Research Technical Implementation Panel (ETIP), Chair (current)American Chemistry Council Science Policy Team (current)Endocrine Issues Science Forum, Chair (1994-2000) PROFESSIONAL SOCIETIES: Member, Society of Toxicology (SOT) (Current) Member/Founder, Gulf Coast Chapter SOT Member, Society for Risk Analysis (SRA) Member/Founder, Lone Star Chapter SRASources of recent grant and/or contract support: None

Harvey Clewell is currently a Principal with the ENVIRON Health Sciences Institute. He received an M.A. in physical chemistry from Washington University, St. Louis, in 1969, and is a Diplomate of the American Board of Toxicology. He has more than 30 years experience in computer modeling of the environmental fate and transport and biokinetics of toxic chemicals. He is a leading expert in the development, evaluation, and application of PBPK models in chemical risk assessment. He is a member of the FIFRA SAP. His recent research has primarily been funded by the American Chemistry Council, EPRI, and the EPA.

Dr. Donahue received a B.S. in Zoology/Chemistry and minor in Mathematics from North Carolina State University (NCSU) in 1981 and a M.S. in Biological Engineering with a minor in Mathematics from NCSU in 1986. Dr. Donahue obtained a Ph.D. degree in Engineering and Operations Research from NCSU in 1992.Dr. Donahue was appointed program coordinator of the biological engineering program at the University of Maine (UMaine) in July 2001, which has a focus on engineering, applied to the biotechnology and otherbio-type industries and is part of the Department of Chemical and Biological Engineering at UMaine. He was appointed Associate Professor of Engineering (with tenure) at UMaine in September 2000. He joined the faculty at UMaine in February 1995 and currently has a 50/50 research/teaching appointment. Dr. Donahue teaches a junior level statistical process control (SPC) course each semester that is taken by all UMaine engineering students, an introductory biomedical engineeringcourse, an introductory engineering course to biological and chemical engineers, and a graduate level computer simulation and modeling course. The modeling course introduces graduate students to the modeling ofcomplex biological systems as they can be modeled as a combination of discrete/continuous systems. He is a certified HACCP

trainer and has trained and assisted small food processors in the development andimplementation of HACCP plans. Dr. Donahue currently receives funding from the Maine Technology Institute, USDA-CSREES, NSF and the Maine Space Grant Consortium.

Dr. Gennings is a Professor of Biostatistics, Virginia Commonwealth University (VCU), Richmond, VA. She received her B.A in mathematics in 1982, University of Richmond, Richmond, VA and her Ph.D. in biostatistics from the Medical College of Virginia, VCU. Dr. Gennings brings expertise in the area of protocol review, study design and statistical support; chemical mixtures risk assessment including developing and implementing statistical techniques useful for estimating risk assessment of exposure to combinations of chemicals; designing economical study designs for mixtures of many chemicals; statistical modeling of pesticide mixtures; and integration of mixtures toxicology and statistics.Dr. Gennings has served as a consultant to the Burroughs Welcome, Co., McGuire Research Institute, RJ Reynolds Tobacco Co., Site ReviewCommittee for NCI, Review Committee for PROPHET System Support and Enhancement (NIH), Peripheral and Central Nervous System Drugs Advisory Committee (FDA), Carpet and Rug Institute, Philip Morris USA, and American Chemistry Council (joint with DOW Chemical and MSU, MI). Recent research funding sources include NIH, USEPA-NCEA, USEPA-OW, EPA-NHEERL and NIEHS.

Dr. William H. Glaze is a Professor in the Depatment of Environmental and Biomolecular Systems at the OGI School of Science and Engineering of the Oregon Health and Science University. Since 1988, he has been Editor of the journal Environmental Science and Technology, the highest rated publication of its type in the world. Since January 2001, he has been Chair of the Executive Committee (EC) of the EPA Science Advisory Board (SAB). Previously, he was the first Chair of the SAB's Drinking Water Committee beginning in 1986. Dr. Glaze received the B.S. degree in Chemistry from Southwestern University in 1956. He received M.S. and Ph.D. degrees from the University of Wisconsin in Madison in 1958 and 1960 and was a Robert A. Welch Post Doctoral Scholar at Rice University. He is the recipient of numerous awards which include the Alexander von Humboldt Foundation Senior Science Award in 1997, and Newsmaker of the Year Award of the American Chemical Society in 2000, and the Advanced Oxidation Technologies Award in 2001. His areas of research interest include analytical methods for the determination of organic compounds in water; ozone and advanced oxidation methods for water treatment; global evaluation of drinking water treatment alternatives. He has been involved in several initiatives related to sustainable environmental management and policy, including the interdependency between the U.S. and Mexico, the development of the Green Chemistry Institute, drinking and wastewater infrastructure in the U.S. and developing countries, future developments to minimize the impact of the automobile, and alternatives to command-and-control regulatory policy.

Dale Hattis is Research Professor with the Center for Technology Environment and Development (CENTED) of the George Perkins Marsh Institute at Clark University. For the past twenty_seven years he has been engaged in the development and application of methodology to assess the health ecological and economic impacts of regulatory actions. His work has focused on the development of methodology to incorporate interindividual variability data and quantitative mechanistic information into risk assessments for both cancer and non_cancer endpoints. Specific studies have included quantitative risk assessments for hearing disability in relation to noise exposure renal effects of cadmium reproductive effects of ethoxyethanol neurological effects of methyl mercury and acrylamide and chronic lung function impairment from coal dust four pharmacokinetic_based risk assessments for carcinogens (for perchloroethylene ethylene oxide butadiene and diesel particulates) an analysis of uncertai! nties in pharmacokinetic modeling for perchloroethylene and an analysis of differences among species in processes related to carcinogenesis. He is a member of the Environmental Health Committee of the EPA Science Advisory Board and for several years he has served as a member of the Food Quality Protection Act Science Review Board. Currently he has also recently served as a member of the National Research Council Committee on Estimating the Health_Risk_Reduction Benefits of Proposed Air Pollution Regulations. The primary source of his recent grant and contract support is the U.S. Environmental Protection Agency. He has been a councilor and is a Fellow of the Society for Risk Analysis and serves on the editorial board of its journal Risk Analysis. He holds a Ph.D. in Genetics from Stanford University and a B.A. in biochemistry from the University of California at Berkeley.

Professor of Environmental Engineering at New Mexico State University. BS in Mechanical Engineering, University of Ceylon, 1966-1970;MS in Environmental Engineering, Drexel University, 1984-1985; PhD in Environmental Engineering, Drexel University, 1985-1988; andPost-Doc, Vanderbilt University, 1989.Areas of expertise include QSAR techniques for physical/chemical properties of organic chemicals, toxicity of organic chemicals and their mixtures to microorganisms, physical/biological processes for treatment of air, soils, and water conaminated with organic chemicals.Service on committees/societies:1. Member, Association of Environmental Engineering Professors2. Vice Chair, Civil Engineering Examination Committee, National Council of Examiners for Engineering & Surveying3. Consultant Sandia National Lab4. Past Chair, Univeristy Research Council New Mexico State UniversityGrants and contracts include QSAR modeling of single chemical toxicity and QSAR modeling of mixture toxicity funded by US Air Force Office of Scientific Research; educational materials development funded by National Science Foundation; biotreatment of gases contaminated with organic vapors funded by Dept. Of Energy; reuse alternatives of agricultural wastes funded by US Dept. Of Agriculture.

An internationally recognized expert in the field of computational toxicology, Dr. Gilles Klopman is a Professor of Research Chemistry at Case Western Reserve University and Director of its Laboratory for Decision Support Methodologies, as well as an Adjunct Professor of Environmental and Occupational Health at the University of Pittsburgh School of Public Health. His current research focuses primarily on the determination of quantitative structure activity relationships in both carcinogenic and chemotherapeutic agents. The most recent funding support for this work is an NIH SBIR grant for $732,670 (grant title: "MCASE QSAR Expert system for Salmonella Mutagenicity," period March 2002-2004). In addition to his academic work, Dr. Klopman is also Founder and President of MULTICASE Inc. (www.multicase.com), a leading developer of computer programs designed to assess the potential pharmacological activity, toxicity and metabolic transformation of new chemicals. He has served as an invited expert to the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM), and is currently a member of the governing board of the World Organization of Theoretical Organic Chemists, a member of the steering committee on "decision support methodologies" of the Agency for Toxic Substances and Disease Registry (ATSDR), as well as an invited participant on the Organization for Economic Cooperation and Development (OECD) Expert Group on QSARs.

Dennis D. Lane is the N.T. Veatch Distinguished Professor of Environmental Engineering at the University of Kansas. He came to KU over twenty years ago after receiving his PhD from the University of Illinois at Urbana. Professor Lane's teaching interests include design of air pollution control equipment, air quality management, physical principles of environmental engineering and environmental management. His research interests include the characteristics and environmental impacts of atmospheric deposition; source-receptor relationships for atmospheric deposition; noncriteria air pollutant monitoring; and development of standard operating procedures for the sampling, analysis, and monitoring of volatile organic compounds (VOCs) in ambient air. Dr. Lane's major fields of specialization are air pollution control, ambient air monitoring, and aerosol science. Research sponsors include NSF, U.S. EPA, NASA, and various commercial sources. Dr. Lane has received the U.S. EPA B! ronze Medal for research; and he served as a member of the Board of Scientific Counselors for the Agency for Toxic Substances and Disease Registry for six years. His total research volume at present exceeds $8,000,000 per year. Current sources of funding include USDOEd, NSF, Kansas University Research Development Fund, USDOT, AT&T Foundation and Mid-America Regional Council. He has published over 110 refereed scientific and professional papers in journals and proceedings.

Current Position: Dr. Merrick is currently head of the Proteomics Group in the National Center for Toxicogenomics at NIEHS/NIH in Research Triangle Park, NC. Educational Background: Ph.D. University of Nebraska, Omaha, NE; Post-doc at Oak Ridge National Laboratory, TNExpertise and Research: Dr. Merrick has expertise in toxicology, proteomics, genomics and biochemistry. His program research involves development of protein biomarkers in target organs and serum and his basic research interests involve the p53 pathway, cell growth and apoptosis and protein phosphorylation.Service on other committees: Serves on Human Proteome Organization subcommittee for Tissue and Cell Proteome. Serves on ILSI-HESIBiomarkers committee. Active in SOT in continuing education courses on proteomics.Grant/Contract support: Federal government intramural budget.

Professor Jeremy K. Nicholson, BSc PhD C Biol FI Biol FRSA FRC Path C Chem FRSC obtained his BSc from Liverpool University (1977) and his PhD from London University (1980) in Biochemistry working on the application of analytical electron microscopy and energy dispersive X Ray microanalysis in molecular toxicology. He was appointed Temporary Lecturer in Chemistry (Birkbeck College, London University, 1981-83) and Lecturer in Experimental Pathology at The London School of Pharmacy (1983-85) returning to Birkbeck as a Lecturer in Chemistry, then Reader (1989) and Professor of Biological Chemistry (1992). He is currently Professor and Head of Biological Chemistry at Imperial College, London. Professor Nicholson is the author of over 400 scientific papers (300 peer reviewed) and articles on the development and application of novel spectroscopic and chemometric approaches to the investigation of disease processes. This work has been recognised by the award of international prize! s including: The Royal Society of Chemistry (SAC) Silver Medal for Analytical Chemistry (1992); The Royal Society of Chemistry (SAC) Gold Medal for Analytical Chemistry (1997) for work on NMR spectroscopy of biofluids and the development of Metabonomics as an investigative tool for studying disease processes; The Chromatographic Society Jubilee Medal (1994) for work in the development and application of directly coupled chromatographic- NMR methods for metabolic analysis; The Pfizer Prize in Chemical and Medicinal Technologies (2002) for the development of NMR-based metabonomics as toxicological and clinical diagnostic tool. He is a member of the Editorial Advisory Boards of Chemical Research in Toxicology, The Journal of Proteome Research, Biomarkers and The Journal of Pharmaceutical and Biomedical Analysis. Professor Nicholson is a Fellow of the Royal Society of Chemistry, The Royal Society of Medicine, The Royal College of Pathologists and a Fellow of the Institute of Biology and is a founder Director and Chief Scientific Officer of Metabometrix, Ltd, an IC spin-off company specialising in advanced metabolic profiling and diagnostics for toxicology, human disease, functional genomics and phenotyping. Current grant funding from The Wellcome Trust, The Royal Society, NERC, BBSRC, EPSRC, MRC, NIH and UK/International industry.

Senior Science Advisor, ExxonMobil Biomedical Sciences - Responsible for inhouse Computational Toxicology Programb. Ph.D. Toxicology; University of Mississippi Medical Center, Jackson, MSc. Area of expertise is "Toxicology" and the application to risk assessment for Petroleum mixtures and Chemical productsd. Diplomate of the American Board of Toxicology, member of the Society of Toxicology and the American College of Toxicology

Jimmy L. Spearow is currently an Associate Research Geneticist, Section on Neurobiology, Physiology and Behavior, University of California at Davis. Dr. Spearow received a BS in Animal Science, Summa Cum Laude from Texas A&M University; a Ph.D. in Genetics from the University of California at Davis; and Post-doctorial training in Human Genetics and Reproductive Endocrinology at the University of Michigan, Ann Arbor. Dr. Spearow expertise and research focuses on Reproductive, Physiological and Toxicological Genetics including: 1) Genetic control of susceptibility to endocrine disruption; 2) Physiological Mechanisms mediating Genetic differences in susceptibility to disruption of reproductive development and function by estrogen and estrogenic agents; 3) Genomic Analysis of genetic differences in susceptibility to endocrine disruption using microarrays; 4) Genetic control of sensitivity to gonadotropins, 5) Mapping and characterizing genes controlling ovulation rate and aromatase activity in mice; 6) Using marker assisted selection and breeding methods to develop inbred, and reproductive congenic strains of mice as animal models for characterizing and identifying genes controlling major genetic differences in reproductive function and susceptibility to endocrine disruption; and, 7) Using molecular genetic markers to determine the effects of cryopreservation methods on genetic stability in multigeneration mouse pedigrees. Dr. Spearow is a member of the Society for the Study of Reproduction; Society of Environmental Toxicology and Chemistry, and Physicians for Social Responsibility. Dr. Spearow has served by contributing data and participating in the National Toxicology Program / Environmental Protection Agency Endocrine Disruptors Low-Dose Peer Review, October 10-12, 2000. Dr. Spearow is also serving as the external reviewer for the US EPA's White Paper on "Species/Strain/Stock for Mammalian in vivo Endocrine Disruptor Assays (via Battelle contract #68-W-01-023 and Battelle SubContract #174067). Dr. Spearow has been funded by the National Science Foundation. IBN Ecological and Evolutionary Physiology program as PI of Grant #9986077 titled "Genetic Differences in Susceptibility to Endocrine Disruption". Duration 4/15/2000 to 1/31/2004. Dr. Spearow was also PI of a NIEHS Center for Environmental Health Sciences Pilot Project grant titled "Genetic Variation in sensitivity to environmental toxicants: effects on gene expression" Duration 4/2001 to 3/2002.

Dr. Weisel is Associate Professor, Environmental Occupational Health Division at the UMDNJ-School of Public Health. He received his undergraduate training in chemistry at SUNY at Stony Brook in 1974; an M.S. in Analytical Chemistry from University of RI in 1978; a Ph.D. in Chemical Oceanography from University of RI in 1981; and postdoctoral training at the NOAA/AOMI in Florida. His expertise is in pharmacokinetics and metabolism of toxicants and exposure to toxicants such as mercury, lead solvents, chorine, ozone, haloacetic acids, etc. Research activities include contribution of outdoor PM sources to indoor concentrations, benzene metabolism and environmental mixtures, telemedicine tools for collecting patient data, asthmatic admissions as indicator or ozone exposure, inhalation and dermal exposure of MTBE (breath analysis) and residential exposure to volatile organic compounds. Dr. Weisel has served on various committees and workshops including NY State Department of Health Accredited Laboratory, SI/NJ Urban Air Toxic Workgroup Advisory Board, Exposure Assessment Research Workshop on Gasoline, Exposure Assessment Research Workshop on Gasoline, , Workshop on Emissions, Modeling and Exposure, NAS Committee to Review Health Effects in Vietnam Veterans of Exposure to Herbicides, Working Group on DBPs and Reproductive Effects, Expert Panel on Benzene Exposure Working Group on the Estimation of Dermal and Inhalation Exposures to Contaminants in Drinking Water, Expert Panel on Benzene Exposure for the Harvard School of Public Health, Chair of Exposure Section of Workgroup on Research Needed to Reduce Uncertainty in Health Risk Assessment for Ozone, American Water Works Association Project Advisory Committee, Workshop on Novel Methods for Risk Assessment of Disinfection By-Product Mixtures in Drinking Water, Steering Committee of Exposure Assessment for Disinfection By-Products in Epidemiologic Studies, Health Canada, Site Visit Member NIEHS Review of PO1 Proposal for a Center at UNC-CH for Environmental Health and Susceptibility, Pediatric Asthma Coalition of New Jersey, Environmental Task Forces, Workshop for the American Chemistry Council Longterm Research Initiatives in Exposure, NIEHS Reviewer of Community-Based Participatory Research Grants, CDC Workshop to Refine Research Agenda for Tap Water Disinfection Byproducts and Human Health. Professional society membership includes American Association for the Advancement of Science, American Chemical Society, American Geophysical Union, American Water Works Association, Association of Teachers of Preventive Medicine and the International Society of Exposure Analysis.Sources of recent grant and/or contract support include HEI, NIEHS, RWJ Foundation Exploratory Grant, NJ DEP, USEPA Subcontract from Battelle Memorial Institute, and Mickey Leland National Urban Air Toxics Research Center.

Dr. William J. (Bill) Welsh holds the Norman H. Edelman Endowed Professorship in the Department of Pharmacology at the Robert Wood Johnson Medical School (RWJMS) in Piscataway NJ, University of Medicine and Dentistry of New Jersey (UMDNJ). Concurrently, he serves as Director of the UMDNJ Informatics Institute which coordinates University-wide initiatives in information technology and informatics-related sciences including bioinformatics, cheminformatics, medical/clinical informatics, and computer-aided molecular modeling. In this capacity, Dr. Welsh is also Director of the UMDNJ Graduate Program in Bioinformatics. Dr. Welsh?s research interests cover a broad range of applications in computer-aided molecular modeling & design including drug discovery, computational toxicology, and optimal design of polymers and bio-relevant materials. His laboratory is also actively engaged in developing novel computational tools useful for molecular discovery, pattern recognition, and bioinformatics. His publication record includes over 150 articles in journals and books, 600 abstracts from presentations at professional scientific meetings, and several patents and patent applications.Dr. Welsh is the recipient of numerous awards and honors, including the Teacher of the Year Award (1983 and 1985), the St. Louis Research Award (1998), the UM-St. Louis Chancellor?s Research and Creativity Award (2001), the University of Missouri Entrepreneur of the Year Award (2001), and most recently the Norman H. Edelman Endowed Professorship (2003). He serves on the editorial board of several scientific journals and is a consultant for several companies in the biopharma area. In 1999, Dr. Welsh founded GenChemiCs (www.genchemics.com), a consulting and contract research company that specializes in the development and application of advanced decision-support tools for drug discovery, pattern recognition, and risk assessment.Current sources of grant and/or contract support include BRDC, NIH-LHLBI, NJ Comission on Higher Education, NIH-NLM and the US EPA.

Dr. Wilson is an Assistant Professor of Chemistry at the University of North Texas. She obtained her Ph.D. with Professor Jan Almlof from the University of Minnesota, and completed her postdoctoral work with Dr. Thom H. Dunning, Jr. in the Environmental Molecular Sciences Laboratory of Pacific Northwest National Laboratory. Her computational research has focused in several areas including environmental chemistry, the development of computational methods to enable reduced computational scaling, the development of several families of correlation consistent basis sets, and benchmarking of methodology. Previous related research includes computational studies of electron transfer within reaction centers of bacteria and one year of bench research in bacterial classification. She is currently funded by several NSF grants, including a recent NSF CAREER Award.Dr. Wilson has been selected as a 2003 IUPAC Young Observer, where she will participate in the Division of Chemistry and the Environment meeting. She has organized two major symposiums in computational chemistry at the previous two Spring National Meetings of the American Chemical Society, and is presently editing an ACS volume on computational chemistry, which is scheduled for publication later this summer. She is an Alternate Councilor in the American Chemical Society.

Current position:Scientific officer of the European Commission, working at the Commission'sJoint Research Centre in ItalyEducational background:Bachelor's degree in physiological sciences (emphasis on biochemistry,chemistry and pharmacology), master's degree in linguistics, and PhD incomputational toxicologyAreas of expertise:Development and validation of QSARs, validation of in vitro toxicity tests,design of integrated assessment strategies combining QSARs and in vitro testsCurrent research:Supervision of research on development of QSARs for acute toxicity,blood-brain barrier penetration and metabolismCurrent service on advisory committees:1) OECD Ad Hoc Expert Group on QSARs2) OECD Validation Management Group for Non-Animal Methods for EndocrineDisruptors (includes in vitro tests and QSARs)Formerly, Secretary of the ECVAM Scientific Advisory Committee, whichadvises the Commission on the scientific validity of non-animal methodsSources of recent grant support:European Commission training grant from February 1998 to February 2001

Raymond S. H. Yang is presently Professor of Toxicology and Director of Center for Environmental Toxicology and Technology, one of 14 Programs of Research and Scholarly Excellence at Colorado State University (CSU). Between July 1990 and June 1995, Dr. Yang served as the Head, Department of Environmental Health, College of Veterinary Medicine and Biomedical Sciences, CSU, Fort Collins, CO. Prior to joining CSU in 1990, Dr. Yang spent seven years each in chemical industry (Bushy Run Research Institute, Union Carbide - Mellon Institute, 1976 - 1983) and in the federal government [National Institute of Environmental Health Sciences/National Toxicology Program (NIEHS/NTP), 1983 - 1990]. Dr. Yang received his B.S. in Biology from the National Taiwan University in 1963; M.S. and Ph.D. in Toxicology/Entomology

from North Carolina State University in 1967 and 1970, respectively. Between 1970 and 1973, he was a postdoctoral fellow at Cornell University in Environmental Toxicology. Between 1973 and 1976, he was Research Associate and then Assistant Professor at the Institute of Comparative and Human Toxicology, Albany Medical College. Dr. Yang had also been appointed Adjunct Associate Professor at University of Pittsburgh and Adjunct Professor at North Carolina State University.Dr. Yang's research expertise and interests cover many subdisciplines in toxicology, including toxicology of chemical mixtures, toxicologic interactions, physiologically based pharmacokinetic/pharmacodynamic (PBPK/PD) modeling, biologically based dose-response (BBDR) modeling, carcinogenesis and neuro-developmental toxicology. Between 1992 and 2000, he served as the Program Director of the NIEHS Superfund Basic Research Program Project at CSU and since the summer of 1999 he has been the Program Director for an NIEHS Quantitative Toxicology Training Grant. Since 1990, Dr. Yang has been developing an interdisciplinary research program on Quantitative and Computational Toxicology using the central theme of PBPK/PD, BBDR, and reaction network modeling of chemicals and chemical mixtures at CSU. Dr. Yang's committee work includes serving as a Committee or Expert Panel Member for the following Committee/Panel or organizations: National Academy of Sciences/National Research Council Safe Drinking Water Subcommittee on Mixtures; USEPA/Environmental Criteria Assessment Office (ECAO); Screening and Testing Work Group of the Endocrine Disruptor Screening and Testing Advisory Committee, USEPA; Electric Power Research Institute (EPRI); Expert Panel Member, Risk Assessment for Mixtures of Drinking Water Disinfection-Byproducts, International Life Sciences Institute/USEPA; Institute of Medicine, National Academy of Sciences Committee to Study the Interactions of Drugs, Biologics, and Chemicals in Deployed U. S. Military Forces; Chair for a Chemical Mixture Workshop Agency for Toxic Substances and Disease Registry (ATSDR); Health Council of the Netherlands; Society of Toxicology Expert Panel on Chemical mixtures; Chemical Mixture Committee member to National Occupational Research Agenda, NIOSH; and NIEHS Environmental Health Sciences Review Committee (i.e., Study Section on Center Grants and Training Grants). Dr. Yang's research support came principally from the National Institute of Health (NIH), U.S. Air Force, ATSDR, and Center for Disease Control and Prevention (CDC)/National Institute of Occupational Safety and Health (NIOSH). Recently, Dr. Yang was awarded a contract on developing an approach to incorporate PBPK modeling to cumulative risk assessment from the USEPA, NCEA Cincinnati.

ATTACHMENT 3

Two comments were received 6/23/03 via email from:

1. John H. Austin, PhD
   Environmental Engineer
   Health, Infectious Disease and Nutrition Division
   Global Health
   US Agency for International Development

   and

2. Holley Galland, MD MPH
   Professor of Clinical Family Medicine
   Chief of Family Medicine
   LSU Health Science Center at Earl K Long Medical Center